

New records, and new species of Nematocera (Diptera) from the Ethiopian region.

by

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The types of the species described below are in the collection of the South African Institute for Medical Research, Johannesburg. I wish to express my thanks to the collectors for entrusting their material to me.

CULICIDAE.

MADAGASCAR.

Anopheles (Neomyzomyia) radama sp. nov. (Fig. 1, d, e, f, g).

♀ *Head*: with broad yellowish upright forked scales in the middle; frontal tuft prominent; third segment of the antennae with a patch of white scales interiorly; palps shaggy with four narrow pale bands. *Mesonotum*: densely clothed with broad flat, yellowish scales, medianally some narrower yellowish scales present; scutellum with similar scales; anterior tuft not pronounced, composed of short, upright, rather broad yellowish scales which appear truncated if not forked. *Pleura*: sternopleuron with a patch of flat white scales in the middle near the border of the mesepimeron and another smaller patch lower down; mesepimeron with a similar patch accompanying the lower mesepimeral bristles; two propleural hairs; anterior pronotal lobes bare. *Wing*: conspicuously marked with black and yellow scales as shown in the figure. *Legs*: all femora and tibiae speckled there being very little tendency for the pale spots to form complete bands, speckling irregular and individual spots variable in size; first tarsus of all legs speckled but not so prominently as the femora and tibiae, rest of the tarsi unspeckled; tarsi I—III of fore leg each with a prominent apical pale band; of the mid leg with very faint apical pale bands and of the hind leg with well marked apical pale bands which are not so prominent as on the fore leg, in addition the IVth tarsus of the hind leg is white tipped; Vth tarsus on all legs dark. *Abdomen*: very dark brown clothed with dark hairs except apically where apical margin of segment VII and segment VIII are provided with narrow yellow scales, these scales show up very prominently against the otherwise dark abdomen. *Pharynx*: of the *Neomyzomyia* type but with more teeth than in any other species; teeth apparently simple except for the basal lateral barbs present on some of the median ones; median teeth broader than lateral ones.

♂ As in the female; wing slightly paler; VIIIth segment of the abdomen almost completely covered with yellow scales. Terminalia not examined.

Distribution: Type female, one other female and one male. Madagascar. (Locality not stated) (Lt. B. J. Young).

This species belongs to the *Neomyzomyia* group and resembles *ardensis* Theo. but is easily separable on account of the heavy scales on the mesonotum and other details.

The existence of a new *Neomyzomyia* in Madagascar has been suspected for some time. Quite early on in the military campaign Lt. Young sent me some anopheline larvae and amongst them was a *Neomyzomyia* related to *ardensis* Theo. and *natalensis* Hill and Haydon but easily separable. Recently a parcel of adults was received from the same sender and amongst them the new species described above. Unfortunately it is not possible to be certain that the larva is that of the new species.

Anopheles pretoriensis Theo. Adults and larvae. Locality not stated. (Lt. B. J. Young).

Anopheles marshalli Theo. Adults and larvae. Locality not stated. (Lt. B. J. Young).

ABYSSINIA.

Anopheles coustani Lav. Adults. Jimma (Capt. Kisner).

Culex (*Culiciomyia*) *nebulosus* Theo. Adults. Jimma (Capt. Kisner).

Culex (*Culex*) *trifilatus* Edws. Adults. Jimma (Capt. Kisner).

BELGIAN CONGO.

Anopheles coustani subspecies *caliginosus* subsp. nov.

Tarsi IV and V and about apical fifth of III of the hind leg white the rest of the leg segments entirely dark without any pale scales at the articulations of the joints. Wing with the costa entirely dark; first vein dark except for a small yellow spot near the apex; third vein mainly yellow scaled; fifth vein with slightly more than the basal half of the stem dark, the rest mainly yellow scaled; sixth vein with the basal half yellow and the rest mainly dark. All pale scales on the wing yellow. Mesonotum greyish in the middle with brassy vestiture and without any white scales even on the anterior promontory. Palp entirely dark except for a few whitish scales on the internal basal aspect. Pale upright scales in the middle of the head whitish or creamy. Pleura greyish; a few spiracular hairs present; anterior pronotal lobes with an apical tuft of black scales; pleural chaetotaxy apparently as in *coustani* Lav. and varieties but all specimens pinned laterally. Abdomen very dark brown; scale tuft at the apex of sternite VII reduced and consisting of dark scales only.

The dark palps, dark costa and leg markings separate this subspecies from all other members of the *Myzorhynchus* series. It is difficult to decide what status it should be given or where exactly it belongs in the series. In the absence of males and the early stages I am regarding it as a subspecies of *coustani*. Other members of this series collected in the same locality by Dr. Vincke are:

coustani Laveran, *coustani* var. *ziemanni* Grunberg, a doubtful *coustani* var. *tenebrosus* Donitz, and one specimen like *tenebrosus* but with the whole of the third hind tarsus pale.

Distribution: Type ♀ and 23 other ♀♀, all in rather poor condition, taken as adults. Jadotville, Belgian Congo (Dr. Vincke).

Anopheles squamosus var. *entebbiensis* Evans. A series of adults with their associated larval pelts. The adults are indistinguishable from the type form. Jadotville (Dr. Vincke).

Anopheles michaeli De Meill. and Leeson. A female. Jadotville (Dr. Vincke).

Anopheles vinckei De Meillon. Two adults reared from larvae. Mongbwalu (Dr. Jansens).

Aedes (Aedimorphus) lamborni Edws. Adults and their associated larval pelts. Jadotville (Dr. Vincke).

Aedes (Aedimorphus) flicis Ingram and De Meillon. Adults and larvae. Jadotville (Dr. Vincke).

Aedes (Stegomyia) metallicus Edws. Adults. Jadotville (Dr. Vincke).

Aedes (Stegomyia) luteocephalus Newstead. One female. Jadotville (Dr. Vincke).

Culex (Culex) aurantapex Edws. Adults. Jadotville (Dr. Vincke).

Culex (Culex) argenteopunctatus Ventrillon. Adults. Jadotville (Dr. Vincke).

Culex (Neoculex) salisburyensis Theo. Adults and larvae. Jadotville (Dr. Vincke).

Culex (Lutzia) tigripes Gpre. Adults and larvae. Jadotville (Dr. Vincke).

Uranotaenia alba Theo. Adults and larvae. Jadotville (Dr. Vincke).

Taeniorhynchus (Coquillettia) microannulatus Theo. Adults. Jadotville (Dr. Vincke).

Taeniorhynchus (Coquillettia) nigrithorax Theo. Adults. Elizabethville (J. Ogilvie).

Ficalbia (Mimomyia) perplexens Edws. Larvae. Guya (Dr. Vincke).

NORTHERN RHODESIA.

Anopheles brunnipes Theobald. Adults and larvae. Luanshya (Chas. Payne).

Culex (Culex) fatigans W. Adults. Luanshya (Chas. Payne).

Aedes (Stegomyia) aegypti L. Larvae. N'Dola (M. Viljoen).

Aedes (Diceromyia) ?taylori Edws. Adults and associated larval pelts. Livingstone (J. Muspratt). These specimens resemble *furcifer* Edws. in having the abdomen speckled dorsally but the male terminalia are like those of *taylori* except that each sidepiece has a small internal apical lobe which is rather difficult to see. Edwards (Mosquitoes of the Ethiopian Region III, p. 215) does not figure or mention such a lobe in his description of *taylori*. The larval pelts associated with these *taylori* from Livingstone certainly do not agree with the description recently given of this species from the Sudan by Lewis (Proc. R. ent.

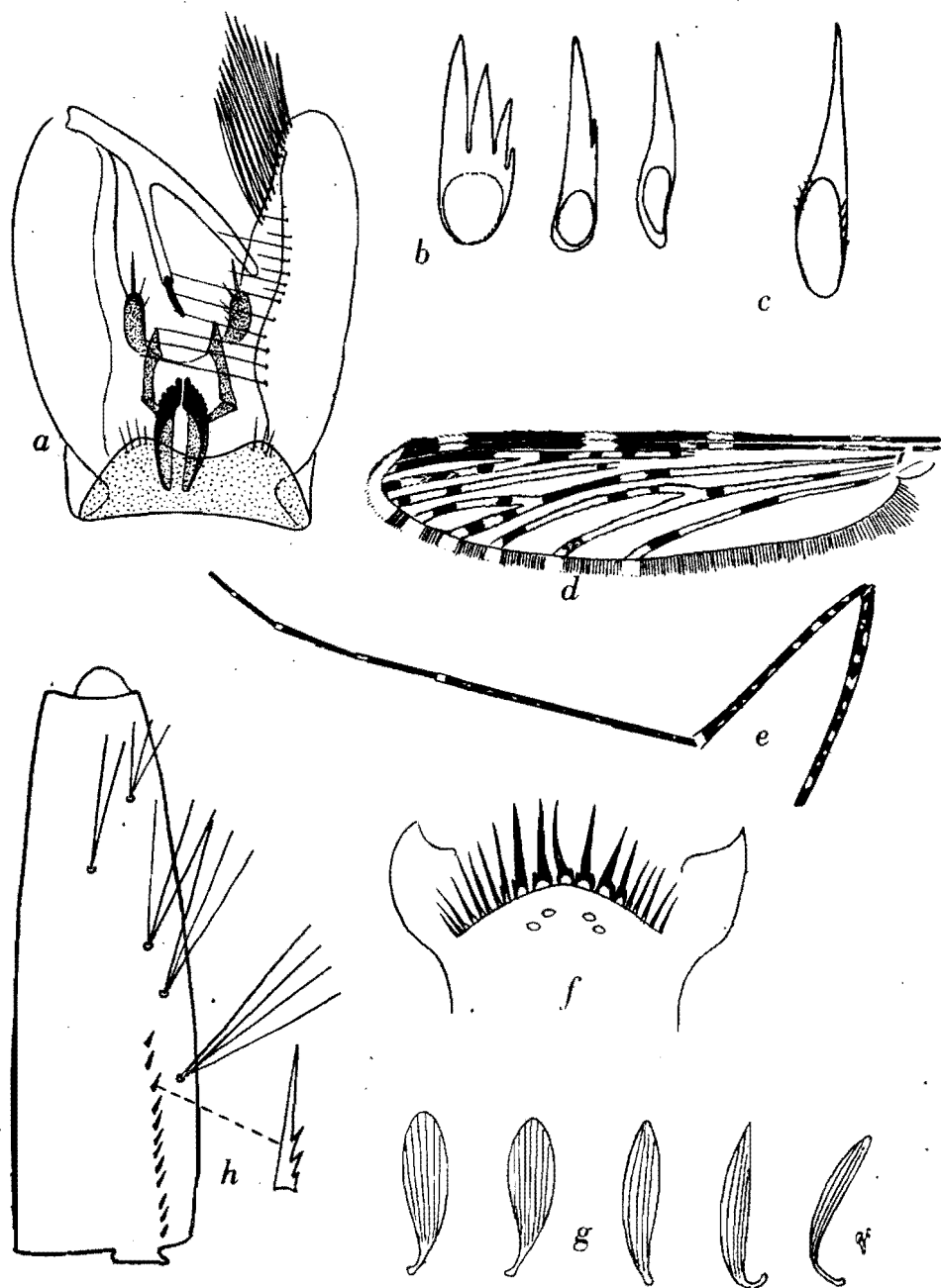


Fig. 1. *Aedes*(*D.*) *niveus* sp. nov.: a. male terminalia; b. one distal and two proximal spines from the pecten; c. comb spine. *Anopheles* (*N.*) *radama* sp. nov.: d. female wing; e. hind leg; f. pharynx; g. meso-notal scales. *Culex andersoni* subsp. *bwambanus* Edws.: h. siphon.

Soc. Lond. (B) II, 153, 1942). I have seen specimens similar to the Livingstone adults collected in Tanganyika by Mr. W. V. Harris.

Aedes (Diceromyia) niveus sp. nov. (Fig. 1, a, b, c).

♂ A strikingly coloured mosquito with the mesonotum largely white as in some species of *Finlaya*. *Head*: almost completely white scaled, most of the scales broad but some narrow ones on the nape; palp with a white ring in the middle, the two terminal segments hairy, turned down and white scaled above; proboscis black throughout, slightly shorter than the palps; antennae with black verticils and the tori white scaled on their inner surfaces. *Mesonotum*: except for a pair of anterior marginal dark spots the whole densely and evenly clothed with narrow white scales which extend up to and round the prescutellar area. *Scutellum*: with each lobe covered with broad white scales. *Pleura*: a few post spiracular bristles but none on the lower mesepimeron; with patches of broad white scales as follows:— a large patch on the upper mesepimeron, one about equally large on the upper sternopleuron, one slightly smaller on the lower mesepimeron, a small patch on the postspiracular area and a few subspiracular scales; posterior and anterior pronotal lobes densely clothed with broad, flat, white scales. *Wings*: dark scaled throughout. *Legs*: hind femur with about the basal half white all round, knee spot prominent especially on the anterior side where it is longer than broad; mid femur pale on the basal half posteriorly, anteriorly mainly dark but posterior white area visible as a line on the inner side, apex as in the hind femur; fore femur as mid femur but apical pale spot much reduced; tibiae of the hind and mid legs all dark except for a few pale scales at the extreme base; fore tibia all dark anteriorly but with an indistinct line of pale scales posteriorly; tarsi I—III of the hind leg each with a very broad, basal, pale band which on III equals half the length of the segment, these bands all more or less of the same length, tarsi IV—V all dark; in the mid leg tarsus I with more than the basal half white and II with only the apex dark, in each case the dark area somewhat larger posteriorly, III—V all dark; in the fore leg extreme base of tarsus I pale anteriorly and about the basal half pale posteriorly, II with more than the basal half pale, III—V all dark. *Abdomen*: tergites II—VII with broad, white, basal bands, on IV—VII these bands do not reach the lateral margins; I—VIII each with a large, white, basal spot which is connected with the basal bands on II and III but separate on the rest. Sternites mainly dark scaled but some narrow white banding present especially basally, not easily perceptible because of shrinkage. Coxites with some white scales. *Terminalia*: coxite heavily scaled, long and narrow of almost even width throughout with a small internal basal lobe carrying a stout bristle apically and another somewhat smaller, in addition a dense subapical patch

of long scale-like setae; clasper forked for more than half its length the lower branch with a long terminal spine; phallosome simple consisting of two separate toothed plates.

♀ *Head*: as in the male but a rather more pronounced patch of flat black scales on each side of the vertex, palp nearly half the length of the proboscis, white tipped; antennae with tori white scaled and the first flagellar segment with a few white scales and some black ones. *Mesonotum*: as in the male but anterior marginal dark areas rather more extensive and more dark scales intermixed with the white ones. *Scutellum* and *pleura* as in the male. *Wing*: extreme base of the costa white scaled, in the male this white scaling is hardly perceptible. *Legs*: as in the male but fore tibia lacking the line of pale scales. *Abdomen*: as in the male.

Larva. Head: antenna sparsely spiculate, shaft hair with three to five branches, simple, or very sparsely plumose, situated just before $\frac{1}{2}$. Seta A of 12 finely plumose branches; B situated well forward about in line with *d* of 2—3 moderately long simple or minutely barbed branches; C 2—3 branched, simple, about as long as B; *d* smaller than either A, B or C of about 12—15 delicate, simple, branches. Mentum with a large pointed tooth in the centre, on each side of this five smaller teeth followed by three somewhat larger ones of which the last one is somewhat removed from the rest. *Abdomen*: comb of ten heavy spines each with a fringe of small basal denticles. Siphonal tuft of 5 delicately barbed branches, subsiphonal of about 10 similar branches; anal of about 10 apparently similar branches. Siphon dark brown, index 4 in one pelt but only $2\frac{1}{2}$ in the other which, however, has been somewhat flattened in the process of mounting; tuft at about $\frac{1}{2}$ of five branches the longest of which exceeds the diameter of the siphon. Pecten reaching nearly to the middle of the siphon of 9—10 teeth in the long siphoned specimen and 8—13 in the other; teeth rather variable, proximal ones simple or with a minute subbasal denticle, in the more distal ones this denticle is enlarged until it almost attains the length of the main spine; the terminal spine may have two additional basal denticles. Upper caudal seta with 4 very long simple branches; lower caudal seta simple, single, stouter and very much longer than any of the branches of the upper. Saddle complete, hair of 3 minutely barbed branches. Ventral brush not well developed, consisting of 3—4 pairs of tufts each of 3—5 relatively short branches.

Distribution: Type male, two other males and four females from tree holes. Livingstone, N. Rhodesia. (J. Muspratt).

This species is related to *fascipalpis* Edws. from which it differs in many respects, notably male terminalia and ornamentation. In the absence of lower mesepimeral bristles both in the male and female *niveus* differs from all other *Diceromyia* I know of. Edwards (Mosquitoes of the Ethiopian Region III, page 108) indeed, has used this character in the subgeneric sense. According to the terminalia

there seems little doubt that *niveus* is a *Diceromyia* so that it would appear that the subgenus requires redefining.

SOUTHERN RHODESIA.

Anopheles garnhami Edws. Adults. Umtali (C. V. Meeser).

Aedomyia furfurea End. Adults and larvae. Fort Victoria (C. V. Meeser).

Aedes (Stegomyia) unilineatus Theo. Adult. Fort Victoria (C. V. Meeser).

SOUTH WEST AFRICA.

Anopheles rufipes Gough. Adults. Tsumeb (Military).

Culex (Culex) fatigans W. Adults. Windhoek (Military). This appears to be the commonest domestic mosquito in Windhoek. Strangely enough all larvae that were sent for identification, and they numbered several hundreds, resembled *pipiens* L.

Aedes (Stegomyia) aegypti L. Adults. Windhoek. Tsumeb (Military). Apparently common in Windhoek.

SWAZILAND.

As was to be expected the anopheline fauna is typically South African. An interesting find was *ruarinus* Edws. larvae of which were collected in rock pools in a river bed. The following is a list of the species found by me during a visit in 1940 and since then by Dr. Mastbaum of the Swaziland Medical Service.

Anopheles coustani Lav.

A. pretoriensis Theo.

A. squamosus var. *cydippis*
De Meill.

A. cinereus Theo.

A. squamosus var. *entebbiensis* Evans.

A. ruarinus Edws.

A. funestus Giles.

A. squamosus Theo.

A. lesoni Evans.

A. demeilloni Evans.

A. rufipes Gough.

A. gambiae Giles.

NATAL.

Culex (Culicomyia) nebulosus Theo. Adults and larvae. Eshowe (B. de M.).

Culex trifilatus Edws. Adults and larvae. Larvae were abundant in tree holes and were not found breeding anywhere else. This species has apparently not been recorded from tree-holes before. The adults were typical but in some specimens there was no trace of dorsal abdominal banding.

Culex (Neoculex) avianus sp. nov. (Fig. 2, a—g).

A strikingly ornamented mosquito resembling *pulchithorax* Edws. but differing in details of ornamentation and male terminalia.

♀ Head: vertex with pale, creamy, narrow decumbent and black, upright, forked scales; borders of the eyes with narrow creamy scales anteriorly and broad flat ones posteriorly. Palps: very dark brown about one fifth or slightly less the length of the proboscis; proboscis very dark brown throughout. Pharyngeal

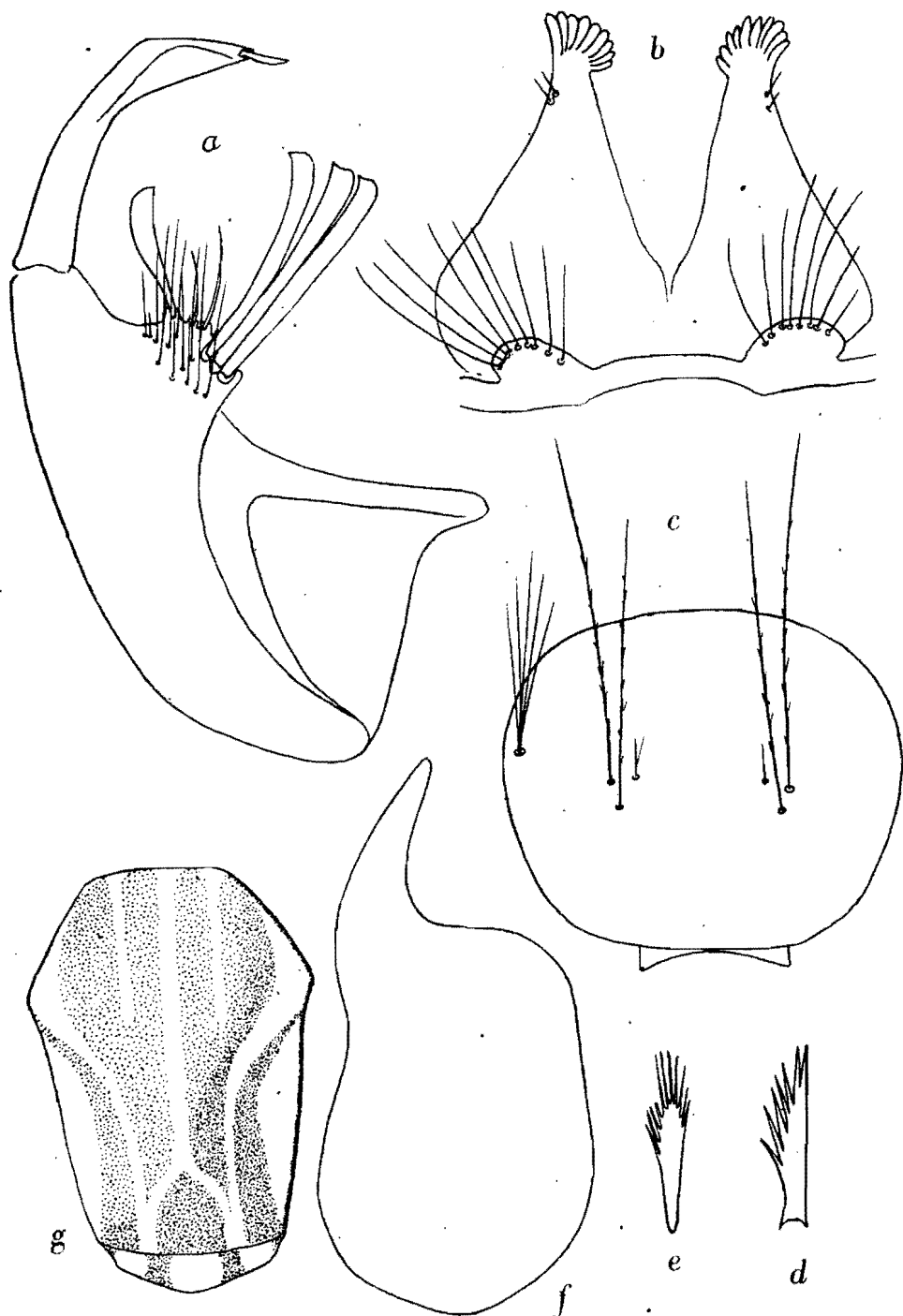


Fig. 2. *Culex(N.) avianus* sp. nov.: a. sidepiece; b. IXth tergite and procotiger; c. clypeus of larva; d. pecten spine of larva; e. comb scale of larva; f. phallosome in side view; g. dorsum of female thorax.

teeth: much as in *albiventris* Edws. with about 24 teeth in each of two rows, in the lower row they are blunted and in the upper row pointed and spatulate except in the middle where they appear to be more slender. *Thorax*: mesonotum very dark brown with five distinct lines of narrow creamy scales as follows:— one narrow median which forks in front of the prescutellar area; on each side of this a short narrow line which reaches slightly more than half way to the prescutellar area; on each side of the short lines a broader line which near the middle of the mesonotum turns inwards, narrows, and fuses with the forks of the median line. Above the wing roots a large patch of narrow creamy scales; each lobe of the scutellum covered with similar scales. *Pleura* with patches of flat white scales as follows:— a small patch on the anterior pronotal lobes, propleura, prosternum and lower sternopleuron; a large patch on the upper sternopleuron and a heavy line on the upper mesepimeron; prealar area with similar scales; posterior pronotal area with a patch of narrow white curved scales. *Wing*: black scaled throughout. *Legs*: tarsi and tibiae dark throughout; fore and mid femora white scaled beneath to the apex; hind femur with basal half all white, anteriorly the white scaling is continued to near the apex. *Abdomen*: dorsally very dark with a bluish green iridescence, unbanded but tergites VI and VII each with a small lateral apical patch of pale scales; ventrally the tergites with apical pale bands; sternites completely pale scaled as far as the VIth, VIIth pale apically and with some scattered pale scales basally, VIIIth completely dark.

♂ Resembles the female. Palps slender, practically bare, reaching to the apex of the proboscis, the terminal segment slightly shorter than the subterminal. *Terminalia* as commonly seen in this subgenus; IXth tergite narrow, bilobed, each lobe with a number of long bristles; coxites short, broad basally but tapering apically; style slightly expanded before the apex, provided with a relatively long spine apically; paraprocts each with a crown of flattened, rather blunt-tipped teeth; phallosome simple, pointed apically, smooth, without any teeth or tubercles.

Larva: brownish with a darker head. *Head*: antenna spiculate, infuscated beyond the antennal tuft; seta A 4—5 branched, B and C single, very long, minutely barbed; d short, single or bifid. *Abdomen*: comb of more than 50 scales each with a delicate fringe; siphonal tuft with three pectinate branches; subsiphonal tuft with four long pectinate branches; saddle hair two branched, simple; brush well developed with a few tufts proximal to the barred area; anal papillae slender, pointed, subequal, longer than the saddle; siphonal index about 7; pecten extending about one third of the siphon, consisting of 15 sharply pointed straight spines each with 4—5 basal denticles; siphon with 4—6 subventral tufts, each double and very much longer than the diameter of the siphon; upper caudal seta three branched.

The larva resembles that of *salisburyensis* Theo., but is easily separable on account of the larger number of basal denticles on the pecten spines and smaller number of branches to the subventral tufts of the siphon.

Distribution: Type female and a number of males and females reared from larvae collected in a rock pool of brownish water in deep shade in the bed of a small stream. Cathedral Peak, Drakensberg, Natal. Aug. 1942 (B. De M. and J. Murray).

***Culex andersoni* subsp. *bwambanus* Edws. (Fig. 1, h).**

Larva. Head and siphon blackish. *Head*: antenna spiculate, infuscated, tuft at three fifths with about 25 plumose branches. Setae A, B and C plumose, consisting of 6–11, 4–6 and 6–9 branches respectively; d fairly long though shorter than either A, B or C, single, simple; e of 4 small delicate branches. Mentum with one large central tooth and 9 subequal smaller ones on each side. *Abdomen*: comb of 40–50 small scales each with a delicate apical fringe. Siphon with index varying from just over 3 to nearly 4; pecten of 9–15 teeth each with 0, 1, 2 or 3 basal denticles, the more distal teeth may be more widely spaced or not, in some specimens the spacing varies on the two sides of the siphon; 3 pairs of median subventral tufts in the majority of specimens but in one there are 2½ pairs and in another only two pairs, these tufts 2–4 branched, barbed, and about as long as the diameter of the siphon; in addition a pair of subventral tufts nearer the apex of the siphon, smaller than the median tufts and slightly removed from them, shorter than the diameter of the siphon measured where they are situated, 2–3 branched, simple; also a pair of lateral tufts placed between the apical and other subventral tufts, 2–3 branched, simple or sometimes with one or two minute barbs, slightly shorter than the diameter of the siphon measured where they are placed. Siphonal, subsiphonal and anal tufts of 5–8, 10–13 and 2–4 plumose branches respectively. Saddle almost covering whole of the anal segment. lateral seta single or double, in one specimen 3 branched. Upper caudal seta 2 branched, lower single. Gills rendered invisible in mounting fluid.

Distribution: Exposed rock pools in a stream bed. Cathedral Peak, Drakensberg, Natal. 4–5000 ft. Sept. 1942. (B. De M. and J. Murray). Described from sixteen pelts obtained from specimens reared in isolation.

The males which were obtained from these larvae were typical of *andersoni* subsp. *bwambanus* Edws. which is known from a single male from Uganda. In Edwards' key (Mosquitoes of the Ethiopian Region III) the female, because of its relatively paler hind femur, runs down to *andersoni* subsp. *abyssinicus* Edws. As the male terminalia of the Cathedral Peak specimens is typical of subsp. *bwambanus* I am regarding the insects as belonging to that subspecies.

The larva bears a remarkable resemblance to that of *fatigans* W. The differences appear to be as follows:— head seta C relatively more branched; an additional pair of subventral tufts in the majority of specimens; subsiphonal tuft with more branches; pecten spines with a maximum of three basal denticles.

The specimens in which the more distal pecten spines are more widely spaced resemble *andersoni* Edws. and apparently only differ as follows:— siphon shorter; an additional subventral tuft in the majority of specimens.

Culex (*Neoculex*) *salisburyensis* Theo. Adults. Eshowe (B. De M.).

Uranotaenia nigromaculata Edws. Adults. Eshowe (B. De M.).

Aedes (*Aedimorphus*) *capensis* Edws. Adults. Eshowe (B. De M.).

Aedes (*Aedimorphus*) *lamborni* Edws. Adults. Eshowe (B. De M.).

Aedes (*Aedimorphus*) *marshalli* Theo. Adults. Eshowe (B. De M.).

Eretmapodites chrysogaster Graham. Adults. Eshowe. (B. De M.).

CAPE PROVINCE.

Aedes (*Stegomyia*) *aegypti* L. Adults. Upington (Magistrate).

GERATOPOGONIDAE.

TRANSSVAAL.

The following midges, unrecorded from the Transvaal and in some cases from South Africa, were all caught in a light trap at Onderstepoort, Transvaal, during 1942 by Mr. Rene du Toit.

Culicoides distinctipennis var. *egypti* Macfie. It seems that Ingram and Macfie had *pyncostictus* Ingram & Macfie before them when they described the supposed female of *praetermissus* Carter, Ing. and Macfie. *pyncostictus* was not known at that time and *praetermissus* was only known from a single male which I think was *distinctipennis* var. *egypti*. The characters of the male terminalia given by Ingram and Macfie for separating *praetermissus* and *distinctipennis* do not appear to me to be constant.

Culicoides distinctipennis Austen.

Culicoides tokwensis De Meillon.

Culicoides nivosus De Meillon.

Culicoides cornutus De Meillon.

***Culicoides dutoiti* sp. nov. (Fig. 3, f—m).**

Male: small and dark, wing with ill-defined pale spots especially along the posterior border. *Head*: vertex greyish brown, clypeus brown, mouth parts pale brown; eyes narrowly separated, bare. *Palps*: segment III only slightly inflated at the site of the sensory pit, as long or slightly longer than IV and V combined, these two approximately subequal. *Antennae*: pale brown, verticils blackish; the relative lengths and greatest widths of the segments are:

	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	xiv	xv
L	20	8	8	8	7	7	7	7	7	9	24	18	18
W	8	7	7	6	6	6	5	5	5	5	5	5	6

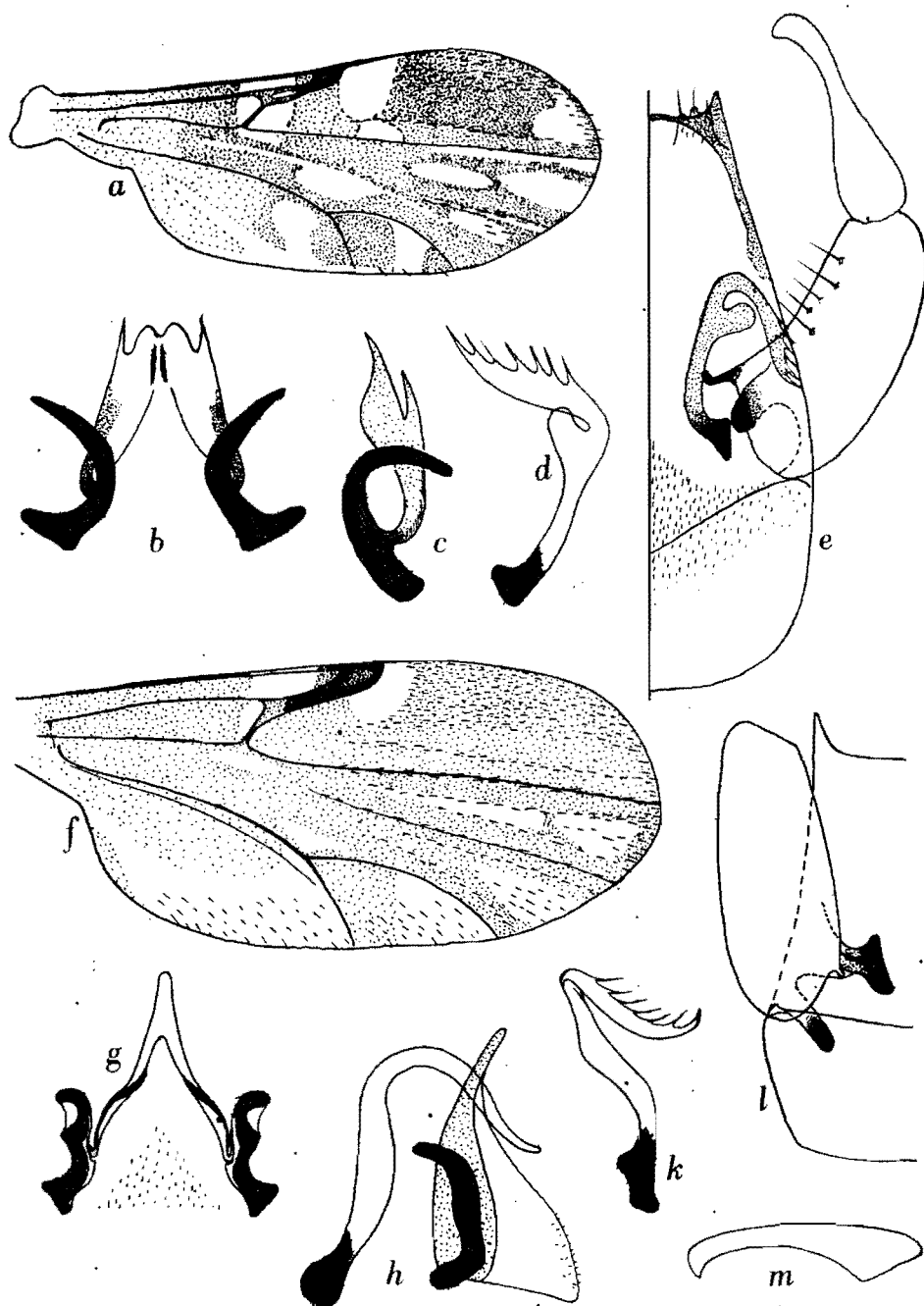


Fig. 3. *Culicoides babrius* sp. nov.: a. male wing, fringe not shown; b. aedeagus, ventral view; c. aedeagus, side view; d. paramere, side view; e. terminalia. *Culicoides dutoiti* sp. nov.: f. female wing, fringe not shown; g. aedeagus, ventral view; h. aedeagus and paramere, side view; k. paramere; l. terminalia; m. clasper.

Thorax: greyish brown with an ill-defined pattern; scutellum greyish with two central and a lateral marginal bristle on each side. **Wing:** the length of the wing measured from the arculus is 0.9 mm. and the greatest width 0.36 mm.; macrotrichia sparse confined to the apical half of the wing, a few in the cubital cell and none in the anal cell, microtrichia dense; 1st radial cell a mere slit, 2nd moderately well developed; greyish with an ill-defined pale spot just beyond the end of the costa and another enveloping the cross vein and costa, another just below the petiole of the median; six very ill-defined pale spots along the posterior border as follows: one between M_1 and M_2 near the border and one further back, one between M_2 and Cu_1 , one just above the fork of Cu_1 , one fairly large in the cubital cell, this spot occupies more than the apical half of the cell leaving a narrow dark band along the border of Cu_2 , one large in the anal cell near Cu_2 extending back to the base of the wing. **Legs:** straw coloured with slightly infuscated knees; morphology as in other species of the genus; hind tibia slightly less than twice as long as the first hind tarsus. **Abdomen:** brown; terminalia: IXth sternite not excavated apically, the membrane spiculate; IXth tergite with the apical lateral processes short, broad basally and sharply pointed; aedeagus triangular with narrow basal arms and the distal portion drawn out but rounded at the apex, each basal arm attached to a heavily pigmented process as seen in the figure; parameres of the type seen in *similis* C.I. and M., *accraensis* C.I. and M. and *babrius* sp. nov. except that they are of almost even width throughout and lack the short, rounded, median lobe; sidepieces and claspers normal, former with basal processes as shown in the figure.

Female. Head: eyes narrowly separate, bare. **Palps:** segment III moderately inflated with a prominent sensory pit; the relative lengths of the segments are II 8, III 11, IV 5, V 7. **Antennae:** the relative lengths and greatest widths of the segments are:

	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	xiv	xv
L	12	6	6	6	6	6	6	6	12	13	13	14	21
W	7	5	5	5	5	5	5	5	5	5	5	5	5

Thorax: mesonotum dark brown with four greyish stripes, two admedian and two lateral, the lateral stripes may be broken up into a series of patches; pleura dark brown; scutellum greyish with two central and one lateral marginal bristle on each side; halteres with creamy crowns and whitish stalks. **Wing:** ornamentation as in the male but pale spots still further reduced; macrotrichia more dense some for instance being present in the anal cell but none proximal to the cross vein; the length measured from the arculus is 1.0 mm. and the greatest width 0.46 mm. **Legs:** normal as in other species of the genus. **Abdomen:** dark brown; spermathecae two, oval, well pigmented, one measuring $44\mu \times 40\mu$ with about 12μ of the duct pigmented, the other slightly smaller and with approximately 8μ of the duct pigmented.

Distribution: Type male and several other specimens taken in a light trap, Onderstepoort, Transvaal. (R. du Toit).

Among material which included this new species were some males of *bedfordi* I. and M. Apart from terminalic characters the new species differs in having the wing more shiny and provided with much less macrotrichia there being none, for example, in the anal cell and none proximal to the end of the costa. Associated with these males were a number of females also easily separable into two groups. One group with few macrotrichia and shiny wings; these I take to be the females of *dutoiti* sp. nov.; they have, however, spermathecae as figured by Ingram and Macfie for *bedfordi*. The other group of females have dull densely hairy wings, even more so than shown in Ingram and Macfie's figure. These females I consider to be *bedfordi*, but unfortunately they have a globular spermatheca without any pigmentation of the ducts.

It is possible that the female recorded by Macfie from Dar-Es-Salaam, in which fewer macrotrichia are present, may be *dutoiti* sp. nov.

Forcipomyia lepidota Ingram and Macfie.

Forcipomyia biannulata Ingram and Macfie.

Forcipomyia macronyx Goetghebuer.

Forcipomyia iphias De Meillon.

***Forcipomyia soranus* sp. nov.** (Fig. 4, h, g).

Male: a small dark brown species with pale legs and whitish halteres. **Head:** eyes separated by more than the width of one facet, bare. **Palps:** segment III slightly inflated medianally at the site of a small sensory pit; the relative lengths of the segments are: II 14, III 28, IV 15, V 6. **Antennae:** dark brown, verticils of the same colour; the relative widths and lengths of the segments exclusive of terminal style are:—

	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	xiv	xv
L	20	11	11	11	11	11	12	13	14	46	28	19	20
W	9	11	11	10	9	8	7	7	6	6	6	6	6

Thorax: mesonotum dull grey with a greenish tinge and fairly long pale yellow bristles; scutellum as mesonotum with three bristles in the middle and three on each side also some hairs; pleura almost black; halteres with dark stems and dull white crowns. **Wing:** unornamented, densely and evenly clothed with macrotrichia. Length, measured from the arculus, 1.4 mm., greatest width 0.4 mm.; the costa ends before the middle of the wing and the cubitus forks well beyond the end of the costa. **Legs:** light brown throughout; the ratio of tI to tII on the fore, mid and hind legs is 1 : 0.7, 1 : 1.3 and 1 : 1.2. **Abdomen:** very dark brown almost black; terminalia, IXth segment elongated, sternite excavated in the middle, tergite short with the apical portion membranous except for a lateral pigmented strip of chitin on each side; sidepieces of almost even width throughout; parameres fused, consisting of a

thin horizontal strip of chitin each end of which is fused to a long thin apodeme from each sidepiece; aedeagus more or less triangular with prominent basal arms and a pigmented oval structure basally, this structure protrudes somewhat from the main body of the aedeagus.

Distribution: Type male taken at light, Onderstepoort, Transvaal. 10.11.42. (R. du Toit).

This species is related to *ingrami* Carter, *stanleyi* Macfie and *griseipluma* Goetgh. From *ingrami* it differs in the shape of the aedeagus, the shortness of the costa and in antennal measurements; from *stanleyi* mainly in the shape of the aedeagus and from *griseipluma* in antennal measurements. Unfortunately the terminalia of this last mentioned species has not been described.

Alluaudomyia melanostictus Ingram and Macfie.

Alluaudomyia natalensis De Meillon.

Dasyhelea fusca Carter, Ingram and Macfie.

Monohalea praeclara Goetghebuer.

***Ceratopogon libanius* sp. nov. (Fig. 4, c, d, e, f).**

Male: a small species, 1st and 3rd veins fused, abdomen with patches of white pigment. *Head*: eyes separated by the width of a facet, bare except along the inner margins. *Palps*: segment III not inflated, a small sensory pit present; the relative lengths of the segments are:— II 6, III 10, IV 7, V 8. *Antennae*: the relative lengths and widths of the segments are:—

	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	xiv	xv
L	20	9	8	8	8	7	7	7	7	10	18	17	20
W	8	6	6	5	5	5	5	5	5	4	4	5	5

Thorax: mesonotum dark brown with greyish spots laterally and a larger grey spot in the middle, prescutellar area largely grey; halteres with white crowns; pleura dark brown; scutellum and postnotum greyish but darker in the middle. *Wing*: the length of the wing measured from the arculus is 1.0 mm. and the greatest width 0.36 mm.; unornamented; macrotrichia very sparse being confined to a few along the anterior border and two or three at the apices of M_1 and M_2 ; wingfield with minute punctuations but microtrichia only seen at the highest magnification on some of the veins. *Legs*: femur of all legs dark brown with a subapical pale band and the extreme base pale, the basal pale area somewhat enlarged on the hind femur; tibiae similar but the apical pale area rather larger and in the hind leg the median dark area reduced to a narrow ring; tarsi mainly pale, the IVth cordiform; claws simple, equal, bifid apically; empodium reduced. *Abdomen*: dark brown dorsally with a pair of admedian apical patches of white pigment on each tergite except V where they are much reduced; terminalia, IXth st. deeply excavated, the membrane spiculate; tergite membranous apically, no lateral apical processes; sidepieces of nearly even width throughout; claspers acutely pointed, bent,

pigmented apically; aedeagus somewhat triangular in ventral view, not well pigmented; parameres separate, each widened distally and produced latero-apically to a small pointed process, poorly pigmented.

Distribution: Type male taken at light, Onderstepoort, Transvaal. (R. du Toit).

This species appears to belong to *Nilohoelea* K. and resembles *albipennis* K. very closely. As Macfie (1940) has pointed out, however, *Nilohoelea* is probably a synonym of *Isohoelea* K.; further, the discovery of more species will probably show that the degree of development of M_2 is not a good generic character. The short costa of the present species places it somewhere near *Isohoelea* as redefined by Macfie but M_2 is practically complete and hence resembles *Ceratopogon*. I have accordingly placed the insect in *Ceratopogon* which is represented by one other species, *C. natalensis* De Meil. in the Ethiopian Region.

***Atrichopogon phrixus* sp. nov.** (Fig. 4, a, b, k).

♂ A small dull species with dark mesonotum and pale legs, scutellum and halteres. *Head*: vertex greyish; eyes separated by less than the width of one facet, bare. *Palp*: segment III not inflated, sensory pit small; the relative lengths of the segments are:— III 20, IV 10, V 13. *Antennae*: pale brown but terminal segments darker, verticils dark; terminal style prominent; the relative lengths, excluding the style, and greatest widths of the segments are:—

	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	xiv	xv
L	18	10	10	10	10	10	10	10	10	19	27	25	30
W	8	9	9	8	7	7	6	5	5	5	5	5	5

Thorax: very dark brown with greyish or light brown dusting, somewhat shiny, shoulders paler contrasting slightly with the rest; scutellum pale brown; halteres whitish; pleura dark brown. *Wing*: unadorned, macrothrichia confined to the apex; the greatest length measured from the arculus is 1.3 mm. and the greatest width 0.5 mm.; the two radial cells well formed, the second about twice the length of the first; the costa reaches beyond the middle of the wing and the cubitus forks below the first radial cell. *Legs*: pale brown throughout without any distinctive markings; tI of the hind leg about $2\frac{1}{2}$ times the length of tII. *Abdomen*: dark brown; terminalia, large, well pigmented throughout and very distinctive; IXth tergite tapering apically to end in a large median lobe; IXth sternite with the distal edge evenly rounded and flush with the lower edge of the aedeagus; sidepieces of almost even width throughout, each with a large, black, median apodeme; claspers of peculiar shape, each widened apically and with a longitudinal ventral projection making the clasper T shaped in cross section near the apex; aedeagus consists of a wide but short strip of dark

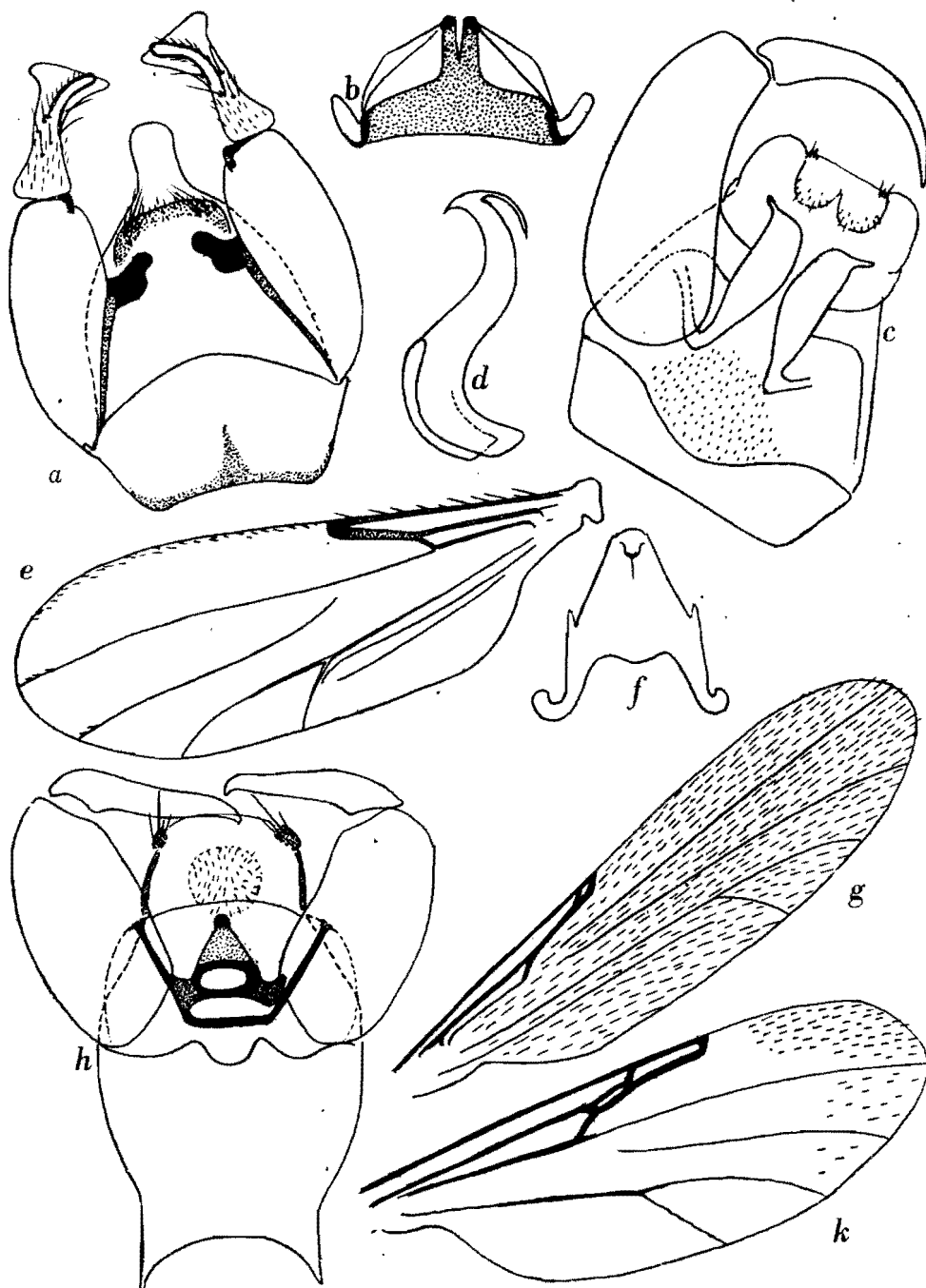


Fig. 4. *Atrichopogon phrixus* sp. nov.: a. terminalia; b. aedeagus; k. male wing, fringe not shown. *Ceratopogon libanius* sp. nov.: c. terminalia; d. aedeagus, side view; e. male wing, fringe not shown; f. aedeagus, ventral view. *Forcipomyia soranus* sp. nov.: g. male wing, fringe not shown; h. male terminalia.

chitin with a median apical projection which is forked and the ends of the forks turned down.

Distribution: 1 ♂, the type, taken at light. Onderstepoort.

The terminalia of this species is quite unlike that of any other Transvaal, November 1942 (R. du Toit).

Ethiopian *Atrichopogon* known to me and it should be easily recognized on this account. Apart from the terminalia there is nothing which particularly distinguishes it and it may eventually prove to be the male of an already described female.

Atrichopogon hirsutipennis Ingram and Macfie.

Bezzia africana Ingram and Macfie. (Fig. 5, a, b, c).

♂ In general appearance this insect resembles the female. *Head*: eyes widely separated; palps, segment III not inflated. sensory pit not well marked; the relative lengths of the segments are:— II 7, III 12, IV 10, V 10. *Antennae*: with segments III—V brown, VI—XI pale brown, XII pale brown but apex infuscated. XIII—XV dark brown; the relative lengths of the segments are:—

	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	xiv	xv
L	20	12	12	12	12	12	12	14	23	30	17	17	23
W	9	9	8	8	7	7	6	6	5	5	5	6	6

Thorax: as in the female, with a distinctive silvery pattern on a black background. *Wing*: the total length of the wing measured from the arculus is 1.4 mm. and the greatest width 0.44 mm.; the costa measured from the arculus is 0.88 mm. in length. it is slightly shorter than in the female and the stem of the cubitus slightly longer hence the costa ends before the termination of Cu₁.

Legs: ornamented and armed as in the female. *Abdomen*: as in the female; terminalia, remarkably like that of *flavicorporis* De Meill. the following differences may be noted:— membrane of the IXth sternite not spiculate; aedeagus consisting of a small dark plate connected basally with a long transparent process which nearly reaches to the apex of the paramere, this is best seen in side view; paramere broader especially apically.

Distribution: Taken at light. Onderstepoort, Transvaal. Nov. 1942 (R. du Toit).

This species was originally described from Mossel Bay, Cape Province in 1923. In 1929 the writer recorded another female from Letaba, Eastern Transvaal. There appear to be no other records and the male has not been described. Together with the male Mr. du Toit also got a number of females; these agree well with Ingram and Macfie's description except that the spermathecae are slightly more elongate one measuring $80\mu \times 60\mu$ with 24μ of the duct pigmented, and the other $96\mu \times 60\mu$ and 28μ of the duct pigmented. The male terminalia resembles that of *flavicorporis* De Meill. with the differences noted above. The two species further resemble one another in the leg armature and thoracic adornment.

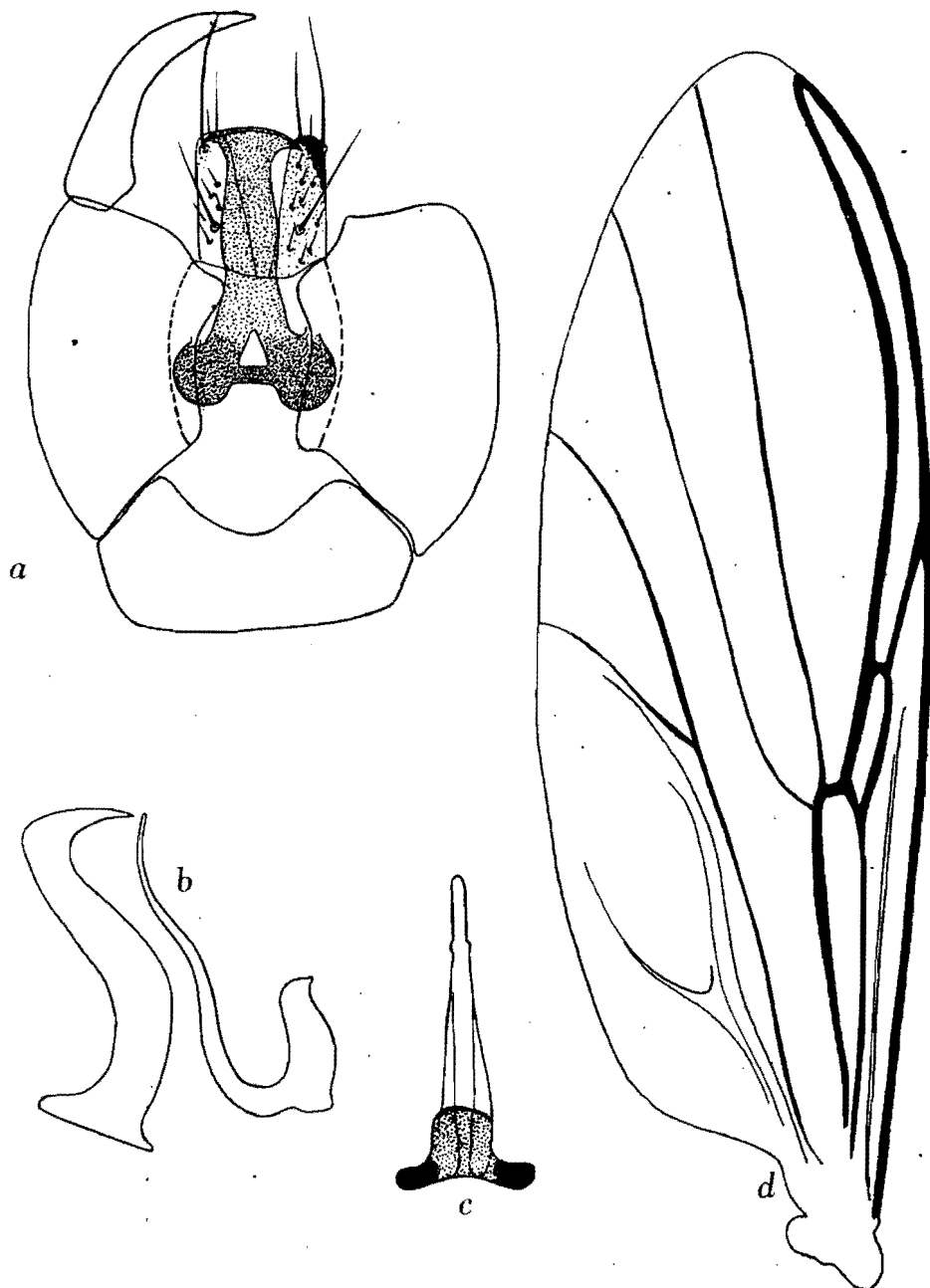


Fig. 5. *Bezzia africana* Ingram and Macfie: a. terminalia; b. paramere and aedeagus, side view; c. aedeagus, ventral view. *Homohoelea melia* sp. nov.: d. female wing, fringe not shown.

The bright yellow abdomen of *flavicorporis* serves to separate the two species immediately.

SOUTHERN RHODESIA.

Palpomyia ruwenzorii Macfie. ♀♀. Bindura (C. V. Meeser).

Atrichopogon melanimum Ingram and Macfie. ♂♂. Bromley (C. V. Meeser).

Culicoides schultzei Enderlein. Salisbury (C. V. Meeser).

Culicoides cornutus De Meillon. Salisbury (C. V. Meeser).

Alluaudomyia congolensis De Meillon. Salisbury (C. V. Meeser).

Alluaudomyia melanostictus Ingram and Macfie. Salisbury (C. V. Meeser).

Bezzia stephensi Ingram and Macfie. Salisbury (C. V. Meeser).

Macroptilium aethiopicum Ingram and Macfie. Salisbury (C. V. Meeser).

Jenkinshalea rhodesiensis De Meillon. (Fig. 6, a, d, e).

Male: dark brown, darker than the female. **Head:** vertex dark brown; eyes separate, bare. **Palps:** small only 0.12 mm. in length; segment III not swollen, without a sensory pit; relative lengths of segments II—V as follows: 7, 8, 6, 7. **Antennae:** dark brown throughout, segments XIII—XV slightly darker; no panache the hairs not arranged in whorls. The relative lengths and widths of the segments are:—

	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	xiv	xv
L	20	10	10	10	10	10	10	10	10	15	20	21	26
W	7	6	6	5	5	5	5	5	5	5	6	5	6

Thorax: mesonotum dark brown, somewhat shiny; somewhat pointed in front but little produced; scutellum dark brown with a lateral marginal bristle on each side and none in the centre; halteres dark brown throughout; pleura dark brown. **Wing:** the length measured from the arculus is 1.2 mm. and the greatest width 0.52 mm.; without macrotrichia, microtrichia dense; unornamented; anal angle enlarged more so than in *corea* De Meill. but not equalling that seen in the female; alula apparently bare. **Legs:** brown but Vth tarsi darker; unarmed; IVth tarsi cordate; claws small, subequal; 1st hind tarsus with a single row of bulbous hairs; the relative lengths of the segments of the hind leg are: femur 25, tibia 22, tI 15, tII 6, tIII 3, tIV 2, tV 3. **Abdomen:** dark brown throughout; terminalia, very similar to that of *corea* De Meill. but differing principally in the shape of the parameres; IXth sternite of a thin strip of chitin; IXth tergite well developed, slightly longer than the sidepieces, narrowed apically with a prominent lateral apical lobe on each side; sidepieces long, only slightly tapering; claspers short less than half as long as the sidepieces; aedeagus triangular in ventral view with a prominent lateral apical tooth on each side; parameres fused basally otherwise narrowly separate, each bluntly pointed and somewhat enlarged before the apex.

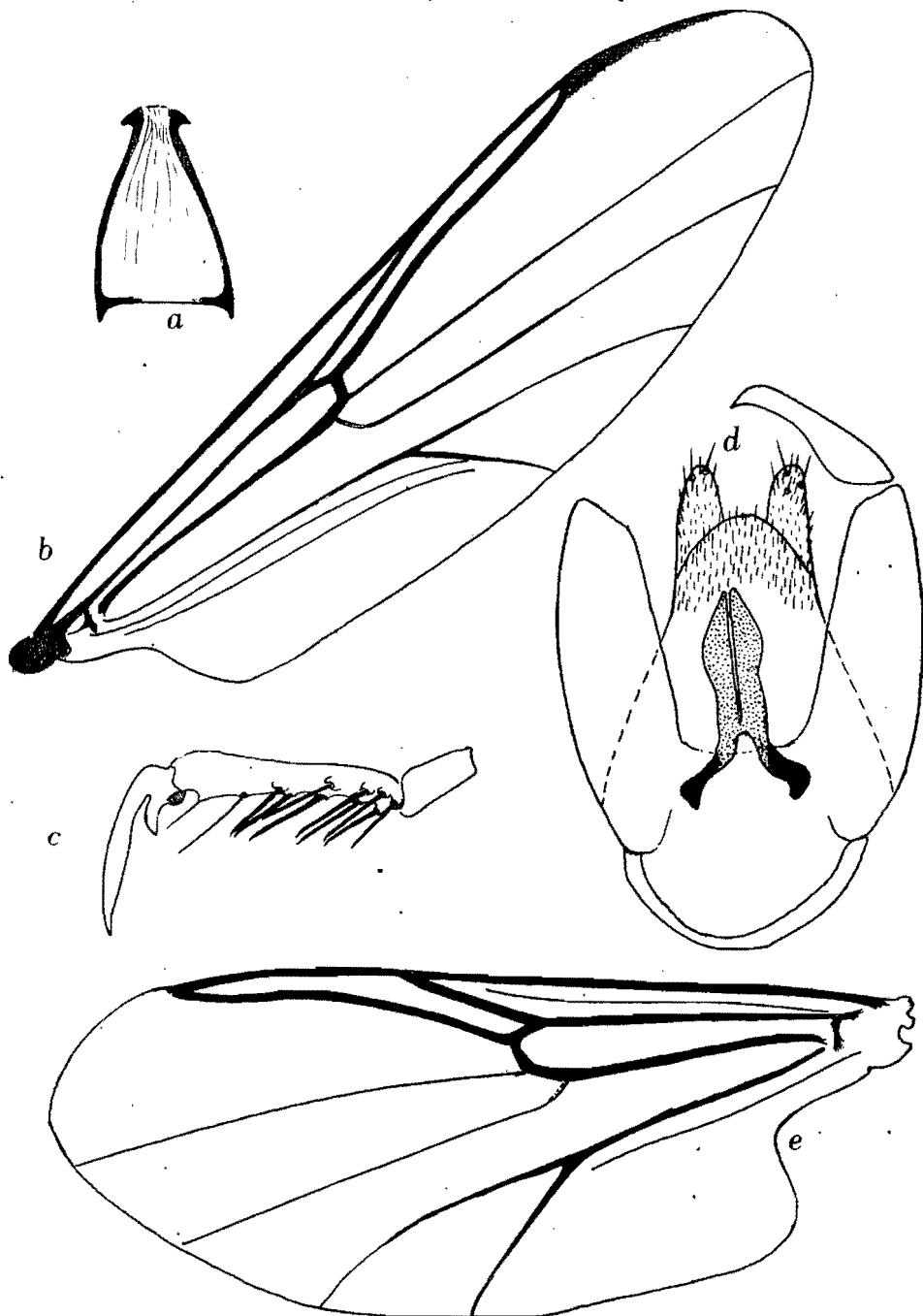


Fig. 6. *Jenkinshelea rhodesiensis* De Meillon: a. aedeagus, ventral view; d. terminalia; e. male wing, fringe not shown. *Nilobezzia*(P.) *hunyani* sp. nov.: b. female wing, fringe not shown; c. hind tarsus, only one claw shown.

Distribution: Msawa Stream, Salisbury, Southern Rhodesia, 20.3.42 (C. V. Meeser).

It is assumed that this insect is the male of *rhodesiensis* De Meill. Mr. Meeser obtained two adults from pupae collected in Msawa Stream, the one a female resembling *rhodesiensis*, and the other the male described above. The pupal pelts of these two insects appear to be identical.

***Nilobezzia (Parrotia) hunyani* sp. nov.** (Fig. 6, b, c).

Female: dark brown with a conspicuous pale abdomen, scutellum and halteres. **Head:** vertex greyish; clypeus elongated; eyes narrowly separated, bare. **Palps:** small; IIIrd segment not enlarged, without a definite sensory pit; segments III—V approximately subequal. **Antennae:** dark brown throughout. The relative lengths and widths of the segments are:—

	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	xiv	xv
L	18	9	9	10	10	10	10	10	22	24	22	22	24
W	8	7	5	5	5	5	5	5	5	5	5	5	5

Thorax: mesonotum dull greyish; pleura very dark brown somewhat shiny; scutellum creamy white with six long bristles; no anterior spine. **Wing:** the length measured from the arculus is 2.5 mm. and the greatest width 0.74 mm.; unadorned; without macrotrichia but microtrichia dense; costa not produced; median broadly sessile; alula apparently bare; fringe normal. **Legs:** the relative lengths of the segments of the hind leg are: femur 55, tibia 49, tI 33, tII 13, tIII 8, tIV 5, tV 10. Femora and tibiae dark brown; Vth tarsi dark brown, rest somewhat paler; femora unarmed and without any long bristles or spinules; mid tibia with a short black spine apically; 1st hind tarsus with a double row of bulbous hairs which reach to the apex, the hairs of the inner row longer towards the apex of the tarsus, apex with three, short, dark setae; Vth tarsi on all legs each with six pairs of long, strong, dark, blunt battonets; claws long, subequal, each with a thumb-like basal barb. **Abdomen:** extreme apex and base brown rest creamy white; no gland rods; spermathecae three, two large and one minute, collapsed so no measurements can be given.

Distribution: One female, the type, Hunyani River, Norton, Southern Rhodesia, 11.6.42 (C. V. Meeser).

There appears to be some question regarding the identity of the two genera *Nilobezzia* Kieffer and *Parrotia* Kieffer. I have therefore followed Macfie and placed *Parrotia* as a subgenus. Only one species has hitherto been described from the Ethiopian Region namely *N(P) spekei* Macfie. The present species differs from *spekei* in many respects e.g. pale abdomen and scutellum, number and character of spines on the Vth tarsal segments and absence of gland rods.

Homohoelea melia sp. nov. (Fig. 5, d).

Female: dark brown but prescutellar area, shoulders, tarsi I—IV and dorsum of abdomen conspicuously paler. **Head:** vertex and back of head greyish; clypeus dark grey; eyes separated by a narrow line; palps light brown; antennae dark brown throughout. **Thorax:** prescutellar area grey; shoulders largely grey with a pale brownish tinge; dorsum of the mesonotum with a pair of admedian grey lines, rest of the mesonotum brown; the most striking features of the mesonotum are the broad median brown stripe flanked by the admedian grey lines and the pale prescutellar area; scutellum evenly brown with a fringe of long bristles; halteres creamy crowns and stems lightly infuscated basally; pleura very dark brown. **Wing:** length, measured from the arculus 2.86 mm., greatest width 10 mm.; second radial cell four times the length of the first; costa reaching very nearly to the apex of the wing; unornamented; microtrichia dense, no macrotrichia; fringe normal. **Legs:** femora, tibiae and Vth tarsi of all legs very dark brown, rest of the tarsi largely straw coloured but each segment infuscated apically; femora not enlarged, armed with short black spines as follows: fI 6, fII 8—9, fIII 5; Vth tarsi each with two pairs of long black batonnets basally; IVth tarsi more or less cordate; claws long, equal, simple; 1st hind tarsus shorter than the tibia with a double row of bulbous hairs. **Abdomen:** creamy white dorsally except at the extreme base and apex where it is dark brown.

Distribution: One female, the type, Brocks Stream, Bindura, S. Rhodesia, 27.6.42 (C. V. Meeser).

The genus *Homohoelea* Kieffer is Nearctic, Neotropical and Oriental and this appears to be the first record from the Ethiopian Region. Among the species that have been described it appears to resemble *abjuncta* K. from India from which it differs in having more spines on the femora and the scutellum dark.

Culicoides babrius sp. nov. (Fig. 3, a—e).

Male: a small species with distinctly marked wings. **Head:** eyes bare, widely separated. **Palps:** segment III slightly swollen with a prominent pit near the apex, IV and V subequal together shorter than III. **Antennae:** the relative lengths and greatest widths are:—

	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	xiv	xv
L	15	7	7	7	7	7	7	7	6	6	17	20	28
W	8	7	6	6	6	5	5	5	5	5	5	6	6

Thorax: mesonotum brownish with ill-defined grey markings; scutellum greyish with two central and a lateral marginal bristle on each side; halteres creamy throughout. **Wing:** the length of the wing measured from the arculus is 0.8 mm. and the greatest width 0.38 mm.; microtrichia dense, macrotrichia confined to the apex of the wing none being present proximal to the end of the

costa; pale, with a prominent dark spot covering the second radial cell and a number of pale spots as shown in the figure; the large pale spot just beyond the end of the costa may be divided into a large upper one and a small lower one, also the pale spot covering the cross vein may extend almost unbroken right onto the stem of the cubitus. *Legs*: femora and tibiae brownish; tarsi straw coloured; hind tibia just over twice as long as tI. *Abdomen*: greyish-brown; terminalia, IXth tergite well developed, narrowed apically with a small lateral apical process; sternite very well developed, excavated apically and the membrane spiculate; sidepieces shorter than the tergite; clasper gradually tapering with a somewhat blunt tip; parameres of the type seen in *accraensis* C.I. and M. and *similis* C.I. and M.; aedeagus consisting of a feebly pigmented transparent plate as shown in the figure and in addition a heavily pigmented crescentic piece attached to the basal arm on each side, it appears that these crescentic pieces are actually parts of the aedeagus and not the sidepieces.

Distribution: Type male and two other males Hunyani River, Norton, S. Rhodesia (C. V. Meeser).

The wing and parameres of this species resemble those of *accraensis* and *similis* but the aedeagus is quite different and the membrane connecting it with the IXth sternite is spiculate.